

# More analysis on environment protection and sustainable agriculture - A case In son La and Thai Nguyen of Vietnam

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**Abstract**— This study presents a case of tea and coffee crops, esp. environment protection and sustainable agriculture in Son La and Thai Nguyen of Vietnam. Research results show us that The process of having an agricultural product goes through many steps such as planting, planning, harvesting, packing, transporting, storing and distributing. - The State adopts policies to encourage innovation of agricultural production models and methods towards sustainability, adapting to climate change, saving water, and limiting the use of inorganic fertilizers and pesticides. chemicals and products for environmental treatment in agriculture; develop environmentally friendly agricultural models. Our research limitation is that we can expand for other crops, industries and markets as well.

**Keywords**— agricultural value chain, sustainability, tea crops, coffee crops, insect alcohol traps, Vietnam

## I. INTRODUCTION

First, Environmental protection is a necessary and mandatory activity in the process of agricultural production because agriculture and rural areas play a great role and are the basis of the sustainable development of the environment.

- Agricultural by-products must be collected to produce commodity products, used as raw materials, fuel, fertilizer production, energy production or must be treated according to regulations; Do not burn the by-products from plants causing environmental pollution.

- The use of wastes from livestock production to make organic fertilizers, water for plants or other purposes must comply with the Government's regulations.

- The Ministry of Agriculture and Rural Development is responsible for directing and organizing the management

of sludge dredged from canals, ditches and irrigation works to meet environmental protection requirements.

### Research questions

Question 1: What are principles of sustainable value chain applying in coffee, tea crops in the North of Vietnam?

Question 2: What are current legal issues in protecting environment in agriculture?

## II. LITERATURE REVIEW

We summarize in below table:

Table 1 - Previous studies

Authors	Year	Content, results
Humphrey and	2002	there are three main groups of

Schmitz		methods to improve value growth in global value chains
Nguyen Trong Diep et al.	2022	DISCUSSING ENFORCEMENT OF THE CONSUMER PROTECTION LAW IN VIETNAM
Pham Van Hong, Nguyen Thao Nguyen, Dinh Tran Ngoc Huy, Nguyen Thu Thuy, Le Thi Thanh Huong	2021	stated that In Vietnam, we will evaluate the effectiveness of VIETGAP and GLOBAL GAP models, principles and standards applying in Vietnam agriculture value chain in a specific case study. The research results show a strict condition for applying VIETGAP and GLOBAL GAP for better quality in agriculture, including: Conditions for soil, irrigation water, fertilizers, pest control, etc.
Johnson, M.A et al	2020	stated that Coffee berry borer ( <i>Hypothenemus hampei</i> (Ferrari), CBB) has invaded nearly every coffee-producing country in the world, and it is commonly recognized as the most damaging insect pest of coffee.

(source: author synthesis)

Beside, On July 12, 2022, in Hanoi, the Ministry of Agriculture and Rural Development held a Workshop on Propagating and disseminating new regulations of the Law on Environmental Protection in 2020 related to the Agriculture and Rural Development sector.

Agriculture is one of the important economic sectors. In 2021, the value of the entire agricultural industry will increase by about 2.9%, export turnover will reach 48.6 billion USD, contributing to stabilizing life, ensuring food security, social security... However, the industry Agricultural production also creates a lot of pressure on the environment because waste in the production process (wastewater, agricultural by-products, garbage ...), suffers the opposite effects from environmental factors.

The workshop aimed to provide information, new provisions of the Law on Environmental Protection in 2020 and guiding documents related to the agriculture and

rural development sector, and at the same time assess the opportunities and challenges of the industry in the process of applying the Law on Environmental Protection in 2020. related to the industry for more sustainable development. Along with the Law on Environmental Protection in 2020, new documents on environmental protection in the agriculture and rural development sector include: Decree No. 08/2022/ND-CP dated February 10, 2022 detailing a number of articles of the Law on Environmental Protection; Decree No. 06/2022/ND-CP dated January 7, 2022 regulating mitigation of greenhouse gas emissions and protection of the ozone layer; Decree No. 45/2022/ND-CP dated 7/7/2022 on sanctioning of administrative violations in the field of environmental protection; Circular No. 02/2022/TT-BTNMT dated January 10, 2022 detailing the implementation of a number of articles of the Law on Environmental Protection. New decrees and circulars provide more detailed regulations on the implementation of the Law on Environmental Protection in the field of Agriculture and Rural Development, such as environmental treatment, rehabilitation and restoration in general regulations on land environment protection; Investigate, evaluate, manage and protect the environment of natural heritage in forestry, fishery and agricultural activities; Appraisal of environmental impact assessment reports; Using livestock waste as organic fertilizer, water for crop irrigation or other purposes; Reuse, direct use, common industrial solid waste treatment.

### III. METHODOLOGY

#### Method and Data

This study mainly use combination of quantitative methods and qualitative methods including synthesis, inductive and explanatory methods.

For quantitative analysis, the study is supported with OLS regression.

Data is collected from reliable internet sources and websites of Bureau Statistics, State Bank and Ministry of Finance and Vietnam banks. See below figure 1, we recognize that standard deviation of variable - tea export price has highest value while that of GDP growth is lowest:

### IV. MAIN RESULTS

#### 4.1 Coffee crops planting in Vietnam

After more than 30 years of developing coffee trees, Son La is now the locality with the largest coffee area in the North, with nearly 17,000 hectares, producing about

30,000 tons of green coffee per year. In particular, since 2017, Son La coffee has had a strong transformation when it was granted a geographical indication certificate "Son La Coffee" by the National Office of Intellectual Property for the following product types: Green coffee, green coffee, roasted beans and ground coffee; There is 1 coffee product achieving national level 5-star OCOP in 2021; become regional specialty products, highly appreciated by domestic and foreign markets.

Along with sustainable development of coffee trees, Son La province has been having orientations, goals and strategic solutions to enhance the brand and further enhance the value of coffee trees. Son La province strives



to develop a stable coffee area of over 17,000 hectares by 2025, with an average yield of 2.0-2.5 tons of green coffee/ha; coffee replanting by 2025 with an area of about 8,000 hectares; About 70 - 90% of the coffee area for harvesting products applies certified sustainable coffee production processes; By 2025, coffee processing facilities will have wastewater and waste treatment systems that ensure environmental standards, focusing on improving and enhancing the quality of coffee processing and environmental protection; Deep processing increases the value of coffee production.

(source: sonla.gov.vn)



Fig 1 - Planting coffee in Son La and the north

(source: internet)

Besides, Son La Coffee Association was also established and cooperated with businesses to implement programs to bring products to supermarkets, introduce coffee at booths and trade centers across the country.

(source: danviet.vn)

#### 4.2 Tea crops planning in Vietnam, Thai Nguyen

##### Thai Nguyen province in the northern region of Vietnam has big tea crops.

Because the quality of tea depends quite a lot on the land, weather and care techniques of the farmers. Even within the province, the distance between the two districts is only 25km, but the quality and yield of tea in the two districts are different. While, the average selling price of fresh tea in Thai Nguyen city is 42.5 thousand VND/kg of fresh tea, while the selling price of fresh tea in Dai Tu district is only 29.2 thousand VND/kg.

Table 2- Comparison of profits of tea growing households by different groups  
1,000 VND/kg (fresh tea)

	Cost	Revenue	Profit
General	18.556	37.190	18.634
<i>By location</i>			
Thai Nguyen city	15.863	42.454	26.591
Dai Tu district	22.515	29.455	6.940
<i>By ethnicity</i>			
Kinh	17.707	37.610	19.903
Minority	25.851	33.588	7.738
<i>Education level of household</i>			
Secondary school or lower	18.804	36.409	17.604
High school or upper	17.249	41.308	24.059

Join the link			
Linked	16.083	41.816	25.733
Not linked	19.308	35.784	16.476

(source: Le Van Hung, Pham Van Hong, Project, 2019)

According to population groups, Kinh people have a higher profit from tea cultivation than ethnic minority groups. Ethnic minority groups often live in disadvantaged areas

(Ethnic people often live in mountainous areas of Dai Tu district, far from the center, markets,...) compared to Kinh people in Xinjiang, Thai Nguyen city, so the land is less fertile fat and tea quality are also worse.

#### 4.3 Protecting environment in agriculture - legal issues

The Law on Environmental Protection is approved by the National Assembly in 2020 with 16 chapters and 171 articles with the goal of improving environmental quality, protecting people's health, ecological balance, protecting biodiversity and developing sustainable economy.

For the agricultural sector, the Law on Environmental Protection 2020 sets forth agricultural production processes such as the collection, treatment and reuse of rice straw after harvest, and introduces a manual for fertilizer production. organic fertilizer from straw, rice straw in the Red River Delta; develop a circular economy by utilizing agricultural by-products.

## V. DISCUSSION AND CONCLUSION

### Marketing mix solutions

The process of having an agricultural product goes through many steps such as planting, planning, harvesting, packing, transporting, storing and distributing.

And Wahyuningrat et al (2023) showed rural development in Indonesia, which is considered a strategic key to supporting village development in the country.

Solutions to protect the environment in agricultural production:

Firstly, for fertilizers, products for environmental treatment of livestock have expired; After using tools, packaging for fertilizers, pesticides, and veterinary drugs, local authorities can implement solutions such as building storage tanks for packaging in convenient and reasonable locations. for farmers. Or businesses making direct investment in agricultural production that have generated tools and packages for fertilizers, plant protection drugs, and veterinary drugs, if they cannot collect them, they can sign contracts. transfer these items to the unit that has a

license to treat hazardous waste according to regulations. However, the most important thing is still to raise people's awareness so that there is no longer a habit of using it anywhere and throwing it here.

## RESEARCH LIMITATION

We need to expand further analysis for other crops as well.

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## Exhibit

### Exhibit 1 –Econometric model for tea - export price:

#### correlation matrix

Correlation Matrix					
	TEA_EXPO...	CPI	G	R	RF
TEA_EXPO...	1.000000	-0.783433	0.262450	-0.819496	-0.299648
CPI	-0.783433	1.000000	0.099628	0.744833	0.509105
G	0.262450	0.099628	1.000000	0.095911	0.426732
R	-0.819496	0.744833	0.095911	1.000000	0.678900
RF	-0.299648	0.509105	0.426732	0.678900	1.000000

(source: Ministry of Industry and Trade, Ministry of Agriculture and Rural Development)